

Claims:

The following is a listing of all claims in the application with their status and the text for all active claims.

1. (CURRENTLY AMENDED) A method for alignment of front and rear wheels of a single track vehicle, in particular a motorcycle or bicycle, comprising the steps of:
 - (a) providing a front reference line perpendicularly from the longitudinal centerline of said front wheel to one side of said vehicle and having a front alignment reference point located along said front reference line at a pre-determined distance from the longitudinal centerline of said front wheel;
 - (b) providing a rear reference line perpendicularly from the longitudinal centerline of said rear wheel to the same side of said vehicle and having a rear alignment reference point located along said rear reference line at a pre-determined distance from the longitudinal centerline of said rear wheel;
 - (c) providing a rearward projecting alignment reference line perpendicularly oriented to said front reference line and located at a pre-determined distance from the longitudinal centerline of said front wheel;
 - (d) providing a forward projecting alignment reference line perpendicularly oriented to said rear reference line and located at a pre-determined distance from the longitudinal centerline of said rear wheel; [and]

(e) said front wheel being moved such that said rearward projecting alignment reference line is aligned with said rear alignment reference point, and said rear wheel being moved such that said forward projecting alignment reference line is aligned with said front alignment reference point, so that a common reference plane is formed, with said front reference line and said rear reference line forming perpendicular transversals between said common reference plane and the longitudinal centerline between said front and said rear wheels; [,whereby said front wheel and said rear wheel are aligned with each other.]

whereby said front wheel and said rear wheel are aligned with each other.

2. (CURRENTLY AMENDED) A preferred embodiment apparatus for alignment of front and rear wheels of a single track vehicle, in particular a motorcycle or bicycle, comprising:

(a) a center rib disposed precisely along the longitudinal centerline of said front wheel;

(b) a center rib disposed precisely along the longitudinal centerline of said rear wheel;

(c) a front alignment unit including a front alignment strut, a front laser module, and a front laser target having an opaque surface and having a front alignment target reference mark placed at a fixed and pre-determined distance along the length of said front alignment unit;

- (d) means for disposing said front alignment strut perpendicularly to said center rib of said front wheel of said vehicle so that a rearward projecting laser beam from said front laser module, projecting perpendicularly to said front alignment strut will be parallel to the longitudinal centerline of said front wheel and such that said front laser module and said front alignment target reference mark will be located at a pre-determined distance from the centerline of said front wheel;
- (e) a rear alignment unit including a rear alignment strut, and a rear target mirror having a reflective surface and having a rear alignment target reference mark placed at a fixed and pre-determined distance along the length of said rear alignment unit;
- (f) means for disposing said rear alignment strut perpendicularly to said center rib of said rear wheel of said vehicle so that said rear alignment target reference mark will be located at a pre-determined distance from the centerline of said rear wheel, and such that said rearward projecting laser beam will be reflected as a forward projecting laser beam toward said front laser target;
- (g) said front wheel being moved such that said rearward projecting laser beam is aligned with said rear alignment target reference mark, and said rear wheel being moved such that said forward projecting laser beam is aligned with said front alignment target reference mark, such that said rearward projecting laser beam and said forward projecting laser beam [being aligned with each other, so as to] form a common reference plane parallel to the centerline between said front and said rear wheels; [, whereby said front wheel and said rear wheel are aligned with each other.]

whereby said front wheel and said rear wheel are aligned with each other.

3. (CURRENTLY AMENDED) The wheel alignment apparatus of Claim 2, wherein a rear target having an opaque surface is provided in place of said rear target mirror, and said rear alignment unit further including a rear laser module disposed to emit said forward projecting laser beam; whereby the location of said front alignment reference mark is not dependent on the exact manufacturing alignment of said rear target mirror, and further advantage being improvement of portability and durability by the elimination of a fragile mirror.
4. (CURRENTLY AMENDED) The alignment apparatus of Claim 2 wherein said means for disposing said front alignment strut perpendicularly to said center rib of said front wheel with said front laser module and said front alignment target reference mark located at a pre-determined distance from the centerline of said front wheel consists of an outside wheel clamp beam and threaded rod for clamping said center rib of said front wheel between said front alignment strut and said outside wheel clamp beam.
5. (CURRENTLY AMENDED) The alignment apparatus of Claim 2 wherein said means for disposing said rear alignment strut perpendicularly to said center rib of said rear wheel with said rear alignment target reference mark located at a pre-determined distance from the centerline of said rear wheel consists of an outside wheel clamp beam and threaded rod for clamping said center rib of said rear wheel between said rear alignment strut and said outside wheel clamp beam.
6. – 16. (CANCELED)

17. (NEW) An additional embodiment apparatus for alignment of front and rear wheels of a single track vehicle, in particular a motorcycle or bicycle, comprising:

- (a) a front inside wheel clamp beam extending across the lip of said front wheel so that said front inside wheel clamp beam forms a chord across the lip of said front wheel;
- (b) a front alignment unit including a front alignment strut, front laser module, and front laser target having an opaque surface and having a front alignment target reference mark placed at a fixed and pre-determined distance along the length of said front alignment unit;
- (c) a means for disposing said front alignment strut perpendicularly to said front inside wheel clamp beam so that a rearward projecting laser beam from said front laser module projecting perpendicularly to said front alignment strut will be parallel to the longitudinal centerline of said front wheel with said laser module and said front alignment target reference mark located at a precise and known distance from the centerline of said front wheel;
- (d) a rear inside wheel clamp beam extending across the lip of said rear wheel so that said rear inside wheel clamp beam forms a chord across the lip of said rear wheel;
- (e) a rear alignment unit including a rear alignment strut and a rear target mirror having a reflective surface and having a rear alignment target reference mark placed at a fixed and pre-determined distance along the length of said rear alignment unit;

(f) means for disposing said rear alignment strut perpendicularly to said rear inside wheel clamp beam so that said rear alignment target reference mark will be located at a precise and known distance from the centerline of said rear wheel, and such that said rearward projecting laser beam will be reflected as a forward projecting laser beam toward said front laser target;

(g) said front wheel being moved such that said rearward projecting laser beam is aligned with said rear alignment target reference mark, and said rear wheel being moved such that said forward projecting laser beam is aligned with said front alignment target reference mark, such that said forward projecting laser beam and said rearward projecting laser beam form a common reference plane parallel to the centerline between said front and said rear wheels;

whereby, said front wheel and said rear wheel are aligned with each other.

18. (NEW) The alignment apparatus of Claim 17 wherein said means for disposing said front alignment strut perpendicularly to said inside wheel clamp beam of said front wheel with said front laser module and said front alignment target reference mark located at a precise and known distance from the centerline of said front wheel consists of an outside wheel clamp beam and threaded rod for clamping said inside wheel clamp beam and said outside wheel clamp beam onto said front wheel, with said front alignment unit positioned an offset distance from said front inside wheel clamp beam with said offset distance being equal to one half the difference in width between said rear wheel and said front wheel.

19. (NEW) The alignment apparatus of Claim 17 wherein said means for disposing said rear alignment strut perpendicularly to said inside wheel clamp beam of said rear wheel with said rear alignment target reference mark located at a precise and known distance from the centerline of said rear wheel consists of an outside wheel clamp beam and threaded rod for clamping said inside wheel clamp beam and said outside wheel clamp beam onto said rear wheel.
20. (NEW) The wheel alignment apparatus of Claim 17, wherein a rear target having an opaque surface is provided in place of said rear target mirror, and said rear alignment unit further including a rear laser module disposed to emit said forward projecting laser beam; whereby the location of said front alignment reference mark is not dependent on the exact manufacturing alignment of said rear target mirror, and further advantage being improvement of portability and durability by the elimination of a fragile mirror.